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Per Aberg

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EXAMINER

RALIS, STEPHEN J

ART UNIT

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3742

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,284	Applicant(s) ABERG, PER	
	Examiner STEPHEN J. RALIS	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 16, 17 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 16, 17 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Applicant is respectfully requested to provide a location within the disclosure to support any further amendments to the claims due to when filing an amendment an applicant should show support in the original disclosure for new or amended claims. See MPEP § 714.02 and § 2163.06 ("Applicant should specifically point out the support for any amendments made to the disclosure.").

Response to Amendment/Arguments

3. Applicant's arguments with respect to claims 1-10, 16, 17 and 21-27 have been considered but are moot in view of the new ground(s) of rejection.

Priority

4. Applicant's claim for foreign priority benefit of Swedish Publication No. 0302946-9, filed 07 November 2003, is acknowledge.

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the first regulator, second regulator, control box and software must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In the instant case, software is not statutory

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subject as set forth under 35 U.S.C. 101 and furthermore has no structure recited to provide proper basis to perform the method as recited by applicant in claim 1.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 10, 22 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to claim 10, the examiner can find no disclosure to how one of ordinary skill in the art would implement the method in software. Therefore, claim 10 is deemed non-enabling.

With respect to claims 22 and 25, short arc welding inherently involves the occurrence of a short circuit (see applicant's disclosure as well as Aberg et al.). Therefore, preventing the occurrence of a short circuit during a short arc welding process in which a short circuit is required is deemed non-enabling.

9. Claims 22 and 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

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one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the instant application, the examiner can find disclosure to the preventing occurrence of short circuit during short pulsing, however, the examiner can find no disclosure to preventing the occurrence of short circuit during short arc and/or spray arc welding. Therefore, the recitations to “preventing occurrence of a short circuit during both said short arc and/or spray arc welding and short pulsing” and “wherein said first and second process regulators prevent occurrence of a short circuit during both said short arc and/or spray arc welding and short pulsing” are deemed new matter.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-10, 16, 17 and 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3 and 16 recite the limitation “short arc and/or spray arc welding” and further recite short arc or spray arc welding. It is unclear and indefinite to whether “short arc welding” and short arc spraying” are inclusive or exclusive. In addition, further recitations provide exclusive limitations as opposed to inclusive. Further clarification is required.

In addition claim 1 recites the limitations "short pulsing and the short arc or spray arc welding". It is unclear and indefinite to whether "short pulsing" is a welding or some other technique. Further clarification is required.

Claims 16 recites the limitation "the pre-programming means also comprises a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing, additionally comprising a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing". It is unclear and indefinite to the difference between the "means for preprogramming comprises...." And additionally comprises "...". Both are the same. Further clarification is required.

Claim 10 recites the limitation of "Software for carrying out the method as claimed in claim 1 in a welding set". There are no structural recitations to any structural limitations in the claim. It is unclear and indefinite to what structure elements are required for the "Software". Therefore, the claim is deemed indefinite.

Claim 1 recites the limitation "the pulsing" in lines 9 and 12; the limitation "the method" in line 13; Claim 2 recites the limitation "the pulsing" in lines 2 and 4; Claim 8 recites the limitation "a welding set as claimed in claim 3" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

In general, the claims are replete with such 35 U.S.C. 112, second paragraph issues. The above notes are exemplary with respect to all of the 35 U.S.C. 112, second

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paragraph rejections present in the instant case, all claims must be carefully reviewed and appropriate corrections should be made in response to this rejection.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 1-10, 16, 17 and 21-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamoto et al. (U.S. Patent No. JP 07009149 A – previously cited) in view of Aberg et al. (U.S. Patent No. 6,388,233).

With respect to claim 1, Kawamoto discloses a welding method for gas metal arc welding with continuous electrode feeding (Title; English translation by JPO), comprising the steps of conducting short arc and/or spray arc welding (short circuit transfer welding B; English translation by JPO), conducting short pulsing (pulse MAG welding A; English translation by JPO), alternating cyclically between the short pulsing

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and the short arc or spray arc welding without intentionally extinguishing the arc in between the pulsing and short arc or spray arc welding (English translation by JPO; see Figure 1), and pre-programming duration or time for at least one of the pulsing and short arc or spray arc welding prior to beginning the method (English translation by JPO; see Figures 1, 2).

With respect to the limitations of claim 2, Kawamoto et al. disclose determining the duration or time for the pulsing by a frequency for cyclic alternating between the pre-programmed pulsing and short arc or spray arc welding (paragraphs 16, 22; see Figures 1, 2).

With respect to the limitations of claim 3, Kawamoto et al. discloses a first process regulator (short-circuit current setting device C providing output/regulation; paragraph 22; see Figures 1, 2) for initiating and controlling short arc welding, a second process regulator (pulse current setting device D providing output/regulation; paragraph 22; see Figures 1, 2) for initiating and controlling short pulsing for separating off essentially one droplet per pulse; means for alternating cyclically between carrying out the short arc welding and pulsing (change machine E; paragraph 22; see Figures 1, 2), and means for pre-programming duration or time of the pulsing and short arc spray arc welding prior to commencement of welding (frequency setting machine F and settings means on short-circuit current setting device C as well as pulse current setting device D; paragraph 22; see Figures 1, 2)..

With respect to the limitations of claims 6-9 and 21, Kawamoto et al. discloses short-circuit current setting device C, pulse current setting device D and frequency

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setting machine F providing separate support for setting the respective short-circuit current setting, pulse current setting and frequency setting which would have to include a user interface or setting device or the short-circuit current setting device C, pulse current setting device D and frequency setting machine F would not function accordingly. Therefore, Kawamoto et al. fully meets "wherein the pre-programming means also comprises a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing", "comprising a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing", "a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing" and "a setting device with special support for facilitating programming of the cyclic alternating between the first and second phases" (and variations thereof) given its broadest reasonable interpretation.

With respect to the limitations of claims 16 and 17, Kawamoto et al. disclose a control box (see combination of Figure 2) connectable to a welding set for MIG/MAG welding (see Signal from change machine E; see Figure 2) comprising first process regulator (short-circuit current setting device C providing output/regulation; paragraph 22; see Figures 1, 2) for initiating and controlling short arc and/or spray arc welding, a second process regulator (pulse current setting device D providing output/regulation; paragraph 22; see Figures 1, 2) for initiating and controlling short pulsing, means for

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alternating cyclically between the short arc welding and pulsing (change machine E; paragraph 22; see Figures 1, 2), and means for pre-programming duration or time of the pulsing and short arc or spray arc welding prior to commencement of welding (frequency setting machine F and settings means on short-circuit current setting device C as well as pulse current setting device D; paragraph 22; see Figures 1, 2).

Kawamoto et al. further discloses short-circuit current setting device C, pulse current setting device D and frequency setting machine F providing separate support for setting the respective short-circuit current setting, pulse current setting and frequency setting which would have to include a user interface or setting device or the short-circuit current setting device C, pulse current setting device D and frequency setting machine F would not be able to be set and function accordingly. Therefore, Kawamoto et al. fully meets “the pre-programming means also comprises a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing, additionally comprising a setting device with special support for facilitating programming of a first phase with setting data for short arc or spray arc parameters, and a second phase with setting data for the short pulsing” given its broadest reasonable interpretation.

In addition, Kawamoto et al. disclose setting the cycle times between 2-120 Hz which would have to include a timer in order to provide the functionality disclosed.

Kawamoto et al. discloses all of the limitations of the claimed invention, as previously set forth, however, is silent to the short pulse welding separating off

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essentially one droplet per pulse; the welding device having a power source; Software for carrying out the method of claim 1; the pre-programming means comprising a timer settable for durations or times of 25 to 1000 ms or 50 to 300 ms; preventing occurrence of a short circuit during both the short arc welding and short pulsing; pulsing is conducted by periodically increasing welding current to a pulse current of size and length so that current density in a welding electrode creates sufficient electromagnetic force to separate off one droplet per pulse; the welding current forms a bell curve above background current for each pulse, with the droplet separating at a peak current value for each pulse.

However, synergic pulsing and control thereof is known in the art. Aberg et al., for example, teach that it is conventional for a short arc welding process to involve short circuit welding in which the heat transfer to the material is moderate (column 1, lines 30-50). In addition, Aberg et al. teach a pulse welding process called synergic pulsing in which each pulse separates a drop in order to provide advantages from spraying range in the form of low welding splash without the disadvantages of the great heat transfer. Similarly, a power source (1) being connected between a an electrode (7) and a workpiece (8) is a conventional manner in welding to create a potential difference between the electrode (7) and the workpiece (8). In addition, Aberg et al. teach: pulsing is conducted by periodically increasing welding current to a pulse current of size and length so that current density in a welding electrode creates sufficient electromagnetic force to separate off one droplet per pulse (Abstract; column 2, lines 39-55); preventing occurrence of a short circuit during short pulsing (claim 1); the welding current forms a

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bell curve above background current for each pulse, with the droplet separating at a peak current value for each pulse (column 3, lines 43-57; see Figure 4); and the regulation of such a device can occur in either software or hardware (column 4, lines 57-59). Aberg et al. further teaches the advantage of such a configuration provides a virtually splash-free welding and reduced sensitivity for parameter-setting accuracy, thereby increasing the operational versatility of the welding apparatus (column 3, lines 4-9).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Kawamoto et al. with the synergic pulsing and control thereof of Aberg et al. in order to provide a virtually splash-free welding and reduced sensitivity for parameter-setting accuracy, thereby increasing the operational versatility of the welding apparatus. In addition, to provide durations or times of 25 to 1000 ms or 50 to 300 ms would have been a mere engineering expediency as Kawamoto et al. clearly teaches the variation of the frequency depending on the desired output. Similarly, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide durations or times of 25 to 1000 ms or 50 to 300 ms, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Furthermore, the manner of enhancing pulse welding (without short-circuiting) was made part of the ordinary capabilities of one skilled in the art based upon the teaching of such improvement in Aberg et al. Accordingly, one of ordinary skill in the art would have been capable of applying this known "improvement" technique in the same

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manner to the prior art short-arc welding of Kawamoto et al. and the results would have been predictable to one of ordinary skill in the art, namely, one skilled in the art would have readily recognized that preventing short-circuiting during welding provides a virtually splash-free welding and reduced sensitivity for parameter-setting accuracy, thereby increasing the operational versatility of the welding apparatus.

Prior Art

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

International Publication WO 98/50190 A1 to Aberg et al. is the same teaching of U.S. Patent No. 6,388,233

International Publication WO 03/022503 A1 to Niedereder et al. is a teaching a control panel user interface for welding processes.

U.S. Publication No. 2003/0071024 to Hsu is another teaching a control panel user interface for welding processes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN J. RALIS whose telephone number is (571)272-6227. The examiner can normally be reached on Monday - Friday, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen J Ralis/
Examiner, Art Unit 3742

Stephen J Ralis
Examiner
Art Unit 3742

SJR
May 20, 2009